MEMORANDUM OF UNDERSTANDING

BETWEEN

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

AND

THE NETHERLANDS AGENCY FOR AEROSPACE PROGRAMMES (NIVR)

FOR THE FLIGHT OF

THE NETHERLANDS OZONE MONITORING INSTRUMENT (OMI)

ON

THE U.S. EARTH OBSERVING SYSTEM (EOS) AURA SPACECRAFT

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Preamble

The Netherlands Agency for Aerospace Programmes (NIVR) and the National Aeronautics and Space Administration of the United States of America (NASA) (hereinafter, "the Parties"):

RECOGNIZING that Earth observation from space represents a critical element in the worldwide investigation of global environmental issues;

DESIRING to observe, monitor, and study the Earth's atmosphere from space;

RECALLING nearly three decades of international scientific research and monitoring of the ozone layer;

RECOGNIZING the role of ozone and atmospheric chemistry in global change research and in research of more regional issues, such as tropospheric pollution and air quality;

NOTING that NASA will provide the Earth Observing System (EOS) Aura spacecraft and its launch as part of its EOS Program and its continuing commitment to study atmospheric chemistry and dynamics, and that EOS Aura is one of NASA's primary contributions to a larger international effort to advance multidisciplinary study of the Earth and long-term systematic monitoring of changes in the Earth system;

RECOGNIZING that NIVR will provide the Ozone Monitoring Instrument (OMI) for flight on NASA's EOS Aura spacecraft as part of The Netherlands' Earth Observation programs and of the ongoing participation in international ozone research, and in order to contribute to global monitoring of environmental change;

HAVE AGREED AS FOLLOWS:

Article I - Purpose

The Parties each set forth in this Memorandum of Understanding (MOU) their understanding as to their general responsibilities and the agreed-upon terms and conditions to cooperate regarding the provision by NIVR of OMI for NASA's EOS Aura spacecraft. This MOU shall apply to the OMI development, fabrication and testing, calibration and delivery to the EOS Aura spacecraft and subsequent integration, operation, data processing and delivery, as well as scientific cooperation, use of data, and data distribution.

Article II - Mission Description

1. The EOS Aura mission, consisting of four advanced Earth-observing instruments, is nominally scheduled to be launched in the mid-2003 timeframe into a 705km, 98.2 degree inclination, polar sun synchronous orbit, with a 1:45 p.m. equator crossing time. The satellite will be launched from a U.S. launch site using a launch vehicle provided by NASA. The design life of the mission is 6 years. The objective of the EOS Aura mission is to study the chemistry and dynamics of the Earth's atmosphere with emphasis on the upper troposphere and the lower stratosphere (5-20 km). The EOS Aura instruments will measure ozone, aerosols, and a large number of atmospheric trace gases, playing an important role in atmospheric chemistry, dynamics, air quality and climate of the atmosphere.

2. EOS Aura will carry a suite of four instruments. The Microwave Limb Sounder (MLS) and the Tropospheric Emission Spectrometer (TES) are NASA instruments. The third instrument, High-Resolution Dynamics Limb Sounder (HIRDLS), is a cooperative effort between NASA and the United Kingdom.

3. The fourth instrument, OMI, is a joint Netherlands/Finland contribution to EOS Aura. The primary scientific objective of OMI is to measure total column ozone, ozone profiles, and other atmospheric constituents, such as clouds and aerosols. OMI will make these important measurements to determine how the Earth's ozone layer and UV radiation is responding to the phase-out of ozone-destroying chemicals, as well as to the increasing concentrations of greenhouse gases and atmospheric particulates (e.g., dust and soot) caused by human activity. In addition, OMI will measure distributions of other important gases in the Earth's atmosphere (e.g., SO_2, NO_2 and BrO) that will enhance the overall scientific value of the EOS Aura mission.

4. Each Party will process data from the instruments, making the processed data available to the other Party in a timely manner, as established in Article IV, "NASA Responsibilities," Article V, "NIVR Responsibilities," and Article IX, "Data Policy," and in the Joint Project Implementation Plan (JPIP; Article VIII). The data and products will be made available to the OMI science teams and to the broader international user community through data centers and services under the responsibilities of the Parties according to the data distribution policy established in Article IX, "Data Policy."

5. The Parties will define the implementation of the cooperative activity in a Joint Project Implementation Plan (JPIP), per Article VIII below.

Article III - Participation

As the Netherlands' interest in this cooperative project is strongly shared by Finland, NIVR and the Finnish Meteorological Institute (FMI) have entered into a cooperative

arrangement for the development of OMI, scientific cooperation and use of data. NIVR has informed NASA that this cooperation will continue throughout the duration of the EOS Aura mission. NIVR will share its rights and duties, as described in this MOU, with FMI as a related entity. Moreover, NIVR will ensure that FMI, as a related entity, upholds the terms and conditions set forth in this MOU. NIVR shall ensure that OMI, developed in cooperation with FMI, is made available to NASA for the EOS Aura mission. NIVR will act for NASA in conveying any necessary information or requirements to FMI related to OMI and will act for FMI in conveying information or requests to NASA related to OMI.

Article IV - NASA Responsibilities

NASA will use reasonable efforts to carry out the following responsibilities:

1. Develop, procure, test and launch the EOS Aura spacecraft that will carry and support the OMI instrument. The spacecraft will have interfaces and other required resources to enable the OMI instrument to meet the specifications and performance level defined as agreed in the JPIP.

2. Arrange for the conduct of spacecraft/OMI integration and test functions, including operations at the NASA contractor integration and test facility and at the EOS Operation Center (EOC) located at the NASA Goddard Space Flight Center (GSFC) with the participation of appropriate NIVR and FMI personnel using NIVR-provided test equipment, as mutually agreed.

3. Include OMI-related personnel required to support the integration, testing and operation of the instrument; and include OMI-related personnel at spacecraft technical reviews; and at meetings concerning the interface between the spacecraft and the instrument, if attendance at such activities, reviews and meetings is requested by either Party and agreed to by NASA.

4. Support, as necessary, the conduct of trade studies relating to instrument accommodations, if such support is requested by NIVR and agreed to by NASA.

5. Provide technical assistance as requested by NIVR and agreed to by NASA, including instrument performance analysis and attendance at instrument technical reviews.

6. Inform and coordinate with NIVR, in a timely manner, any relevant changes in spacecraft technical characteristics and development schedules that could affect the instrument interfaces, schedules and resources.

7. Designate a point of delivery and the latest nominal delivery date, as mutually agreed to in the JPIP, for the OMI flight unit and related equipment to be provided.

8. Provide appropriate personnel to the OMI Science Advisory Board (OSAB) and OMI Science Coordinating Team (OSCT), as described in Article VII, "Joint Mission Team and Scientific Investigations." It is envisioned that the NASA Deputy EOS Aura Project Scientist will be the U.S. representative to the OSAB. It is further envisioned that the NASA Deputy EOS Aura Project Scientist, the U.S. OMI science team leader (per subparagraph 9 below) and one additional U.S. representative will be the U.S. participants in the OSCT.

9. Select and fund a U.S. EOS OMI science team and appoint a team leader. The team leader will also serve on the OSCT, as per Article VII, "Joint Mission Team and Scientific Investigations." Support participation of the U.S. team leader and other NASA-sponsored EOS OMI science team members, selected by NASA, in any joint science team meetings and meetings of the OSCT. Ensure that all activities of the U.S. team leader and any NASA-sponsored team members, as related entities of NASA, are carried out in accordance with the terms and conditions set forth in this MOU. NASA will inform NIVR of any changes in the U.S. EOS OMI science team membership.

10. Include the members of all OMI science teams in the EOS Investigator Working Group (IWG) and the EOS Aura science team.

11. Make available pre-launch data for OMI data processing, if provision of the requested data is agreed to by NASA.

12. Perform post-launch check out procedures and testing and provide to NIVR the relevant data required to ensure that the spacecraft is performing as expected, and to assist the instrument team in assessing nominal performance of OMI, as defined and agreed in the JPIP.

13. Designate the NASA EOS Data and Information System (EOSDIS) as the U.S. national data node to be responsible for making data available between the data systems of the Parties. NIVR will establish an analogous national data node. The national data nodes will be responsible for creating and maintaining a directory and inventory of relevant data, as agreed by the Parties. The detailed roles and responsibilities of the national data nodes will be established in the JPIP.

14. Receive and record the raw data stream from OMI on EOS Aura and enable the EOS Aura spacecraft to provide direct broadcast of OMI data as agreed by the Parties and specified in the JPIP.

15. Process the raw data to Level 0 and Level 1b data products, as agreed and detailed in the JPIP, using science data processing software developed and provided by NIVR, as defined in paragraph 14 of Article V, "NIVR Responsibilities." These

raw data, data products and science data processing software will be archived and distributed according to the data policy in Article IX and as detailed in the JPIP.

16. Provide Level 0 and Level 1b data products processed by NASA to NIVR in non-real-time. NASA will make OMI rate buffered raw data available for pick-up by NIVR to satisfy NIVR's near real-time requirement and as detailed in the JPIP. Delivery of near real-time data will be subject to the principles stated in Article X, "Funding."

17. Process the Level 1b data to higher level standard products. These products will be archived and distributed according to the data policy in Article IX and as detailed in the JPIP.

18. Implement all other technical requirements identified in the JPIP as responsibilities of NASA.

Article V - NIVR Responsibilities

NIVR will use reasonable efforts to carry out the following responsibilities:

1. Develop and deliver for flight, as part of the advanced atmospheric chemistry package of the EOS Aura mission, an OMI instrument, including supporting models and spare parts, meeting the specifications, schedules, and performance levels for a nominal instrument lifetime of 5 years, as defined and agreed to in the JPIP.

2. Develop and deliver the agreed instrument-unique ground support and testing equipment, in accordance with the requirements and schedules agreed to in the JPIP for integration and testing, to the NASA-designated delivery point.

3. Provide technical assistance to NASA, including the provision of technical documentation and analytic models and appropriate personnel, to support the integration, testing, and operation of OMI at the spacecraft facility; provide support and assistance during integration, testing and operation of OMI at the launch site and at the EOC located at GSFC in accordance with the JPIP.

4. Include NASA personnel at instrument technical reviews and at meetings concerning the interface between the instrument and spacecraft, if attendance at such reviews is requested by either Party and agreed to by NIVR.

5. Provide appropriate personnel to work and meet with NASA personnel on mission operations and data interfaces throughout the development, prelaunch, launch, and early orbit phases, as defined and detailed in the JPIP.

6. Provide appropriate personnel to attend spacecraft technical reviews, if attendance at such reviews is requested by NASA and agreed to by NIVR.

7. Inform and coordinate with NASA in a timely manner any relevant changes in instrument technical characteristics and schedule that could affect the spacecraft interfaces, schedules and resources.

8. Support, as necessary, the conduct of trade studies relating to instrument accommodations, if such support is requested by NASA and agreed to by NIVR.

9. Provide for the scientific guidance of OMI through the OSAB, OSCT and the Netherlands EOS OMI science team according to Article VII, "Joint Mission Team and Scientific Investigations." It is envisioned that the Netherlands OMI Principal Investigator (PI) will be the Netherlands representative to and chair both the OSAB and OSCT. The Netherlands shall appoint two additional participants to the OSCT and coordinate participation by FMI.

10. Select and arrange to fund a Netherlands EOS OMI science team and appoint a team leader. The team leader will also serve as OMI PI and chair the OSAB and OSCT, as per Article VII, "Joint Mission Team and Scientific Investigations." Support participation of the Netherlands team leader and arrange to support other scientists as team members in any joint science team meeting and meetings of the OSAB and OSCT. Ensure that all activities of the Netherlands team leader and any Netherlands-sponsored team members, as related entities of NIVR, are carried out in accordance with the terms and conditions set forth in this MOU. NIVR will inform NASA of any changes in the Netherlands EOS OMI science team membership.

11. Assist in performing such post-launch check-out procedures and testing as are required to ensure that the instrument is being provided the necessary spacecraft resources and perform the checkout of the performance and operation of the instrument, as defined and agreed in the JPIP.

12. Provide and staff an OMI Support Center to monitor the instrument, generate instrument command lists and schedules, and assist in conflict and anomaly resolution as required. OMI control will be performed at the EOC at GSFC. The relationship between the OMI Support Center and the EOC will be detailed in the JPIP.

13. Designate a Netherlands national data node to be responsible for making data available between the data systems of the Parties. NASA will establish an analogous national data node. The national data nodes will be responsible for creating and maintaining a directory and inventory of relevant data, as agreed by the Parties. The detailed roles and responsibilities of the national data nodes will be established in the JPIP.

14. Develop and provide to NASA the OMI Algorithm Theoretical Basis Documents (ATBD) for processing the Level 0 data to Level 1b data products. In addition, develop and provide science data processing software that implements these algorithms. This software will be delivered to the NASA processing site on at least two occasions before the launch of the EOS Aura spacecraft. The number of deliveries and delivery schedule will be specified in the JPIP. NIVR will assist NASA with Science Software Integration and Test (SSI&T) of NIVR-provided Level 1b software following each delivery to the NASA processing site. NIVR will maintain this software for the duration of processing at the NASA site.

15. Pick up from NASA at EOSDIS Level 0 and Level 1b data products in nonreal-time. These data will be archived and distributed according to the data policy in Article IX and detailed in the JPIP. Pick-up OMI rate-buffered raw data to satisfy NIVR's near real-time requirement, as detailed in the JPIP. Delivery of near real-time data will be subject to the principles stated in Article X, "Funding."

16. Process Level 1b data and rate buffered raw data to higher level and near real-time data products that will be archived and distributed according to the data policy in Article IX and as detailed in the JPIP.

17. Implement all other technical requirements identified in the JPIP as responsibilities of NIVR.

Article VI - Program Management, Coordination and Direction

1. NASA shall provide overall coordination and direction for the EOS Aura mission and shall be responsible for making final decisions to implement EOS Aura, in consultation with the instrument providers for the mission.

2. The Parties shall each designate program management points of contact responsible for the implementation of this MOU. In addition, the program management points of contact will approve the JPIP.

3. The Parties shall each designate technical points of contact responsible for the coordination with regard to instrument development, installation, mission operations, and software. In addition, the technical points of contact will develop the JPIP for approval by the program management points of contact.

4. Mission operations, data processing, and data delivery will be performed jointly by the Parties as defined in Article IV, "NASA Responsibilities," Article V, "NIVR Responsibilities," Article IX, "Data Policy," and detailed in the JPIP.

Article VII - Joint Mission Team and Scientific Investigations

1. The Parties shall each select and arrange to fund a national EOS OMI science team and team leader. The OMI science teams will hold joint meetings as agreed. The Parties shall support the participation of respective team members in meetings and ensure that all activities of team members, as related entities of the Parties, are carried out in accordance with the terms and conditions set forth in this MOU.

2. In addition to the national science teams, two groups will be created to establish a clear line of responsibility on OMI matters and facilitate communication between the science teams and their national sponsoring agencies.

   2.1 The OSAB will advise the Parties on programmatic priorities. It will be chaired by the OMI PI from the Netherlands and will include one representative from NASA and one from FMI. It is envisioned that the NASA representative will be the Deputy EOS Aura Project Scientist, and the FMI representative will be the Finnish Co-PI. The OSAB will be responsible for establishing the scientific objectives and science requirements of the OMI. The OSAB will also provide nonbinding advice to the Parties on science/instrument engineering tradeoffs, schedules, and top-level data issues. The OSAB will concur on the JPIP.

   2.2 The OSCT will help coordinate science activities. Members of the OSCT will be: the three members of the OSAB and six additional participants, two each from the United States, the Netherlands and Finland. On advice of the OSAB and in consultation with NASA and NIVR, the OSCT may appoint to itself additional members or advisors from other entities or countries. Like the OSAB, the OSCT will be chaired by the OMI PI from the Netherlands. The OSCT's tasks will include monitoring the compliance of the instrument with respect to OMI science objectives, establishing calibration and validation requirements, coordinating OMI science activities with regard to the overall EOS Aura mission and flight operations, defining standard and special data products, establishing publication protocol and coordinating initial publications. The OSCT will provide scientific and technical information and advice to the OSAB as required.

3. The Parties shall coordinate to promote the exchange of scientific information relevant to the use of data from EOS Aura between the U.S. and Netherlands/Finnish scientific communities, and will undertake joint scientific investigations, as agreed. The Parties shall seek to coordinate OMI-related research announcements and review of proposals to such announcements.

Article VIII - Joint Project Implementation Plan

1. NASA and NIVR together will develop a JPIP which will be presented to and approved by the designated management points of contact. The technical points of contact shall be responsible for developing the EOS OMI JPIP governing the spacecraft and the OMI. The JPIP will contain detailed statements as to how this cooperative project is to be carried out. The JPIP will address: mission planning, including the EOS Aura Direct Broadcast Mode; instrument measurement objectives; instrument performance specifications; instrument description; instrument, flight and ground support deliverables including overall delivery schedule and equipment to be returned to NIVR; science data processing software deliverables including schedule and responsibilities of the Parties in science data processing software integration and test at the NASA processing facility; implementation responsibilities for both NASA and NIVR; description of technical interfaces; reporting requirements; major instrument and spacecraft milestones; plan for formal and informal reviews; process and configuration control; instrument operations concepts; conduct of mission operations; data delivery timelines, procedures and processing. In general the JPIP will contain all such information as the Parties' management points of contact deem necessary to control the program. Meetings and reviews required to carry out the responsibilities set forth in this MOU will also be included in the JPIP and will, in principle, be held periodically in the U.S, the Netherlands and other sites as agreed. In case of conflict between the JPIP and this MOU, the MOU shall prevail.

2. The Parties will use reasonable efforts to carry out their respective responsibilities in accordance with the schedule to be defined in the EOS OMI JPIP. Each Party will seek to avoid changes that will have a negative effect on the other Party with regard to scientific return, implementation approach, cost and/or schedule and, where such effects cannot be avoided, seek to minimize such effects.

Article IX - Data Policy

All data obtained from OMI will be archived in appropriate NASA and NIVR data centers. Levels 0, 1a and 1b data and higher level standard data products shall be archived by the respective Parties responsible for their generation for at least four years after the termination of data receipt from OMI, unless otherwise agreed by the Parties. Data will be provided between the NASA and NIVR archives for the purposes of original data delivery or mutual back-up without charge. Electronic delivery of OMI standard data products from the Parties to the members of the EOS OMI science teams shall be made at no cost. Delivery of all other data between NASA and NIVR archives will be at no more than the cost of fulfilling the user request. Level 1b OMI data and higher level standard data products, after a period of activation and initial check-out of the instrument

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and data products, will be made available to all users without restrictions at no more than the cost of fulfilling the user request.

Article X - Funding

1. Except as provided in Paragraph 2, each Party shall each bear the costs of discharging its own respective responsibilities under this MOU, including compensation, travel and subsistence of each Party's personnel and transportation of its own equipment and associated documentation. The obligations of each Party under this MOU are subject to its respective funding procedures and the availability of appropriated funds. Should either Party encounter funding problems which may affect its ability to fulfill its responsibilities under this MOU, that Party will promptly notify and consult with the other Party.

2. The costs of special processing required to support near real-time products and the costs of communications links or other equipment required to transfer instrument data and mission management information between the Parties shall be shared by the Parties as mutually specified in the JPIP. In principle, the Party with the requirement for receiving the data shall pay for the establishment and maintenance of the communications links, or that portion of existing links, between the Parties.

Article XI – Customs, Taxes and Immigration

Each Party shall arrange free customs clearance and waiver of applicable customs duties and taxes for equipment and related goods necessary for the implementation of this MOU, in accordance with its respective national laws and regulations. Such arrangements shall be fully reciprocal. In the event that either Party is unable to provide duty-free customs clearance, such Party shall arrange to pay all duties, taxes, or other fees assessed by its customs service. Each of the Parties shall facilitate the movement of persons and goods necessary to comply with this agreement into and out of its territory, subject to its laws and regulations.

Article XII – Ownership of Elements

For the purposes of this MOU, each Party shall retain ownership of all equipment, including hardware and software it furnishes to another Party, unless otherwise agreed. Any equipment not launched into space or consumed shall be returned to the furnishing Party. In the event that any equipment launched into space is retrieved or recovered and comes into the possession of any Party, such equipment shall also be returned to the furnishing Party. Each Party shall transport its equipment to the designated delivery points, as specified in the JPIP, and, where appropriate, from such delivery points, when the equipment is to be returned to the furnishing Party.

Article XIII - Transfer of Technical Data and Goods

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data (excluding software) for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If proprietary design, manufacturing and processing data and associated software is necessary for interface, integration or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.

2. All transfers of proprietary technical data and export-controlled goods and technical data (including software) are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export control or technical data which is proprietary or subject to export controls, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (eg., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer. Nothing in this Article requires the Parties to transfer technical data or goods contrary to national laws and regulations relating to export control or control of classified data.

3. All goods, marked proprietary data and marked or unmarked technical data subject to export control, which are transferred under this Agreement, shall be used by the receiving Party exclusively for the purposes of the programs implemented by this Agreement.

Article XIV - Invention and Patent Rights

1. Nothing in this MOU shall be construed as granting or implying any rights to, or interest in, patents owned or inventions which are independently developed by the Parties or their contractors or subcontractors.

2. In the event that an invention is jointly made by employees of the Parties, their contractors or subcontractors, during the implementation of this Agreement, the

Parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and the terms and conditions of any license or other rights to be exchanged or granted by or between the Parties.

Article XV - Publication of Public Information and Results

1. The Parties retain the right to release public information regarding their own activities under this MOU. The Parties shall coordinate with each other in advance concerning public information activities that relate to the other Party's responsibilities or performance under this MOU.

2. In the event either Party or its investigators publish results primarily obtained from sensor data use, or other information regarding results obtained from the implementation of this MOU, the Party involved with the publication shall make this information available to the other Party, and each Party shall, at minimum, have a royalty free right to reproduce, use, and distribute the publication for its own purposes. The publication shall indicate thereon, as appropriate, that the publication is based on results obtained from NIVR's OMI or any other sensor installed on NASA's EOS Aura spacecraft, as detailed in paragraph 4 of this Article.

3. In no event shall a Party include in a publication either technical data or information on goods furnished by another Party, in accordance with Article XIII, "Transfer of Technical Data and Goods," nor information disclosing another Party's inventions before patent application, without the other Party's prior written consent.

4. All use and publication of data obtained as a result of the cooperative mission will be accompanied with the following citation: "OMI data contained herein were obtained through joint research between the Netherlands (NIVR/KNMI), Finland (FMI) and the U.S. (NASA) in the Earth Observing System (EOS) Aura mission."

Article XVI - Liability

1. NASA and NIVR agree that a comprehensive cross-waiver of liability between the two Parties and their related entities (including their respective investigators) will further the objectives of the EOS Aura mission. The cross-waiver of liability shall be broadly construed to achieve this objective.

2. The relevant text of the Cross-Waiver Agreement, as applied to the Parties to this MOU, provides as follows:

(1) For the purposes of this Article (Cross-Waiver of Liability):

(a) The term "related entity" means:

(i) a contractor or subcontractor of a Party at any tier;

(ii) a user or customer of a Party at any tier; or

(iii) a contractor or subcontractor of a user or customer of a Party at any tier.

The term "related entity" may also include another State or an agency or institution of another State, where such State, agency, or institution is an entity as described in (i) through (iii) above, or is otherwise involved in the activities undertaken pursuant to this MOU.

The terms "Contractors" and "Subcontractors" include suppliers of any kind.

(b) The term "damage" means:

(i) bodily injury to, or other impairment of health of, or death of, any person;

(ii) damage to, loss of, or loss of use of any property;

(iii) loss of revenue or profits; or

(iv) other direct, indirect, or consequential damage.

(c) The term "launch vehicle" means an object or any part thereof intended for launch, launched from Earth, or returning to Earth which carries payloads or persons, or both.

(d) The term "payload" means all property to be flown or used on or in a launch vehicle.

(e) The term "Protected Space Operations" means all activities pursuant to this MOU, including launch vehicle activities and payload activities on Earth, in outer space, or in transit between Earth and outer space. It includes, but is not limited to:

(i) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles, payloads, or instruments, as well as

related support equipment and facilities and services;

(ii) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

The term "Protected Space Operations" excludes activities on Earth which are conducted on return from space to develop further a payload's product or process for use other than for the joint activity in question.

(2) (a) Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in subparagraphs (i) through (iii) below, based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage, whatever the legal basis for such claims, including, but not limited to, delict and tort (including negligence of every degree and kind) and contract, against:

(i) the other Party;

(ii) a related entity of the other Party;

(iii) the employees of any of the entities identified in subparagraphs (i) and (ii) above.

(b) In addition, each Party shall extend the cross-waiver of liability as set forth in subparagraph 2. (2)(a) above to its own related entities by requiring them, by contract or otherwise, to agree to waive all claims against the entities or persons identified in subparagraphs 2. (2) (a) (i) through 2. (2) (a) (iii) above.

(c) This cross-waiver of liability shall be applicable to liability arising from the Convention on International Liability for Damage Caused by Space Objects, done at the cities of Washington, D.C., London, and Moscow, on March 29, 1972, where the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(d) Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:

(i) claims between a Party and its own related entity or between its own related entities;

(ii) claims made by a natural person, his/her estate, survivors, or subrogees for bodily injury, other impairment of health or death of such natural person, except where a subrogee is one of the Parties;

(iii) claims for damage caused by willful misconduct;

(iv) intellectual property claims;

(v) claims for damage resulting from a failure of the Parties to extend the cross-waiver of liability as set forth in sub-paragraph 2. (2) (b) or from a failure of the Parties to ensure that their related entities extend the cross-waiver of liability as set forth in subparagraph 2. (2) (b); or

(vi) contract claims between the Parties based on the express contractual provisions.

(e) Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.

Article XVII - Registration

NASA shall register EOS Aura in accordance with the 1975 Convention on Registration of Objects Launched into Outer Space.

Article XVIII - Settlement of Disputes

Any dispute as to interpretation or implementation of this MOU shall be resolved through consultation between the designated management points of contact. Any dispute that cannot be resolved at this level shall be next referred to the NIVR Director and the NASA Associate Administrator for Earth Science for resolution.

Article XIX - Entry into Force, Duration, Amendment and Termination

1. This MOU shall enter into force upon the date of signature, and it shall remain in force until the completion of all duties and responsibilities of the Parties as defined in this MOU or until December 31, 2010, whichever occurs earlier. This MOU may be amended and extended by written agreement of the Parties. Either Party may terminate this MOU at any time upon 12 months written notice to the other Party. In that event, the Parties shall endeavor to reach agreement on terms

and conditions to minimize the negative effects of such termination on the other Party.

2. Termination of this MOU shall not affect a Party's continuing rights and obligations regarding Article IX, "Data Policy," Article XIII, "Transfer of Technical Data and Goods," Article XIV, "Invention and Patent Rights," Article XV, "Publication of Public Information and Results," and Article XVI, "Liability," unless otherwise agreed by the Parties.

IN WITNESS THEREOF, the undersigned being duly authorized, have signed this Memorandum of Understanding.

Done in duplicate in the English language.

Done at Delft

On May 29, 2001

FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OF THE UNITED STATES OF AMERICA

Done at Delft

on May 29, 2001

FOR THE NETHERLANDS AGENCY FOR AEROSPACE PROGRAMMES

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